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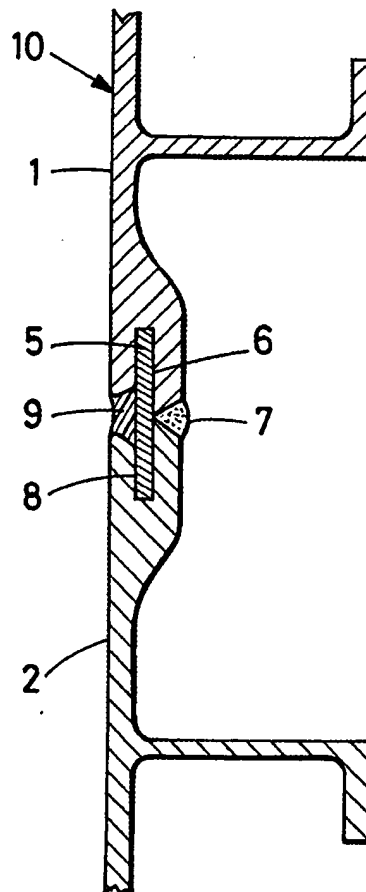
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(54) Process for joining sections by
butt welding and panel obtained by
this process

(57) The invention relates to a process
for joining, by butt welding, sections
(1,2) intended for forming a plane or
curved panel having only one visible

face (10), such as a panel of a railway-
vehicle body, by depositing a weld bead
(7) in a V-shaped bevel, in which pro-
cess the bevel is made on the invisible
side of the panel, in the form of a partial
bevel whose bottom is defined by a sur-
face (6) parallel to the visible face (10) of
the wall. The surface (6) may be the face
of a tongue extending the joining edge
of one of the sections and engaging a
rabbet of the other section, or, as
shown, the surface (6) may be on a false
piece 5 embedded in the sections.

FIG. 2



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FIG. 1

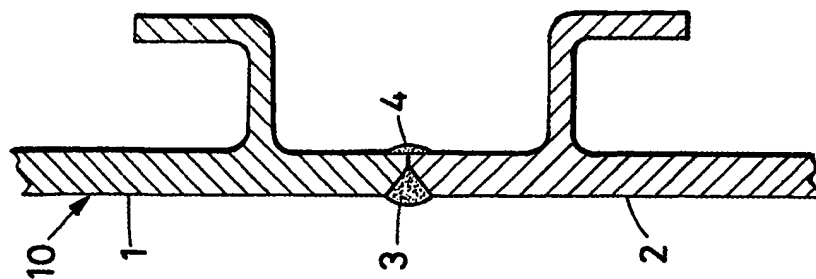


FIG. 2

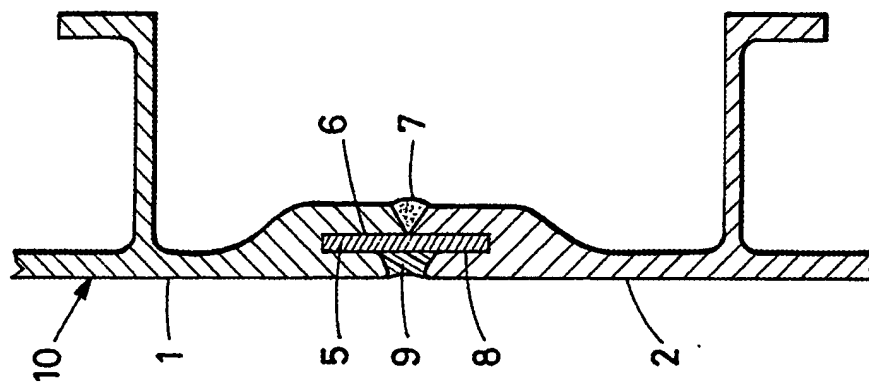
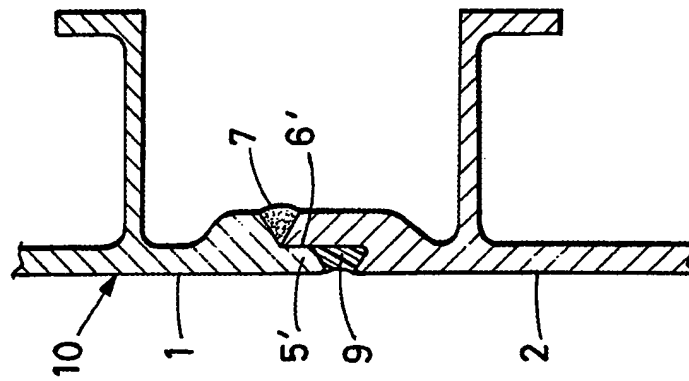


FIG. 3



SPECIFICATION

Process for joining sections by butt welding and panel obtained by this process

5 The invention relates to a process for joining, by butt welding, sections intended for forming a plane or curved panel having only one visible face, such as a panel of a railway-vehicle body, by depositing a weld bead in a V-shaped bevel.

10 It is known that, for some years, the technique for the construction of railway-vehicle bodies has used light alloys in the form of large extruded sections joined by welding. As with any welded structure, the welds for joining the sections to one another have generally been levelled and masked under primer and paint in order to preserve the aesthetic appearance of the visible face. If these additional operations are omitted, the colouration of the metal appears in the region of the welds and cannot be removed by polishing. These disadvantages are compounded by the fact that the production of the weld beads on the visible face causes deformations in the plane of this face.

25 The object of the invention is to overcome these disadvantages by carrying out the welding in a bevel made on the invisible side of the panel, in the form of a partial bevel whose bottom is defined by a bearing surface parallel to the visible face. Thus, in the process according to the invention, the welds on the visible face of the panel are dispensed with, and the appearance and inherent flatness of this face are consequently perfectly preserved.

The abovementioned bearing surface can consist of one of the faces of a false tongue embedded approximately in the middle of those joining edges of the sections which are to be welded. It can also consist of the invisible face of a tongue extending the joining edge of one of the sections, on the visible side, and engaging in a corresponding groove made in the other section.

Furthermore, in that part of their joining edges which is located on the visible side, it is possible for the sections either to be in mutual contact or, preferably, not to be in mutual contact, a separation gap being created which, after the welding operation, is filled with sealing substance, for example a mastic, protecting the weld from the hazards of retaining corrosive cleaning products or atmospheric pollutants.

50 In order to obtain a join of great robustness between sections, despite the use of a partial bevel, it is appropriate to increase the thickness of the sections in the region of their joining edges, for example to double the thickness.

The invention also relates to a panel, such as a panel of a railway-vehicle body, constructed by welding sections in accordance with the process defined above.

60 The process according to the invention has the main advantages of

- dispensing with the weld-levelling operations, the welds now being invisible;
- dispensing with the need to clean the welding zone (the weld projections only affecting the invisible

side of the panel);

- dispensing with the need to apply a primer in the case of a paint finish;

- facilitating the brushing or machining operations with an abrasive band in the case of a "bare" metal finish; and

- limiting the local deformations to which the sections, and the panel which they form, are subject as a result of the stresses due to welding.

75 The description which now follows, with reference to the drawings attached by way of a non-limiting example, will provide a clear understanding of how the present invention can be put into practice.

Figure 1 shows, in cross-section, two sections butt-welded in accordance with the conventional process.

Figures 2 and 3 illustrate, in the same way as Figure 1, two modified embodiments of the welding process according to the invention.

85 Figure 1 recalls the conventional process for joining metal sections 1,2 by butt welding. A partial or complete V-shaped bevel is produced in the edges to be joined, on the visible face 10 of the panel to be constructed, and a weld bead 3 is deposited therein, a further weld bead being deposited on the back at 4, if necessary. The extra thickness formed by the bead 3 is then levelled.

Figure 2 illustrates a first embodiment of the new process. In this case, a V-shaped bevel is again produced. This is a partial bevel, which this time is produced on the invisible side of the panel to be constructed. The bottom of this bevel is defined by a false metal tongue 5, one face 6 of which forms a bearing surface limiting the penetration of the weld during the deposition of a bead 7 in the said bevel. The false tongue is embedded approximately in the middle of the grooves cut in the contiguous edges of the sections 1,2. On the visible face 10, a separation gap is created between the edges of the sections 1,2, the bottom of which is formed by the other face 8 of the false-tongue 5, and which, at the end of the operation, is filled with a sealing mastic 9.

100 In the embodiment of Figure 3, the bottom of the bevel consists of the face 6', located approximately in the middle, of a tongue 5' extending the edge of the section 1 on the visible face 10. This tongue is accommodated in a corresponding groove made in the edge of the section 2 with a width such that a separation gap appears, as in the case of Figure 2, this separation gap finally being filled with sealing mastic 9.

Figures 2 and 3 show that, in order to improve the robustness of the join, the thickness of that part of the sections 1,2 which forms the panel after welding is greater in the region of their joining edges; it is at least twice as great.

120 It will be observed, furthermore, that the weld bead 7 and the mastic bead 9 are opposite one another in the case of Figure 2 and mutually offset in the case of Figure 3.

CLAIMS

1. Process for joining, by butt welding, sections intended for forming a plane or curved panel having

only one visible face, such as a panel of a railway-vehicle body, by depositing a weld bead in a V-shaped bevel, in which process the bevel is made on the invisible side of the panel, in the form of a partial bevel whose bottom is defined by a bearing surface parallel to the visible face.

2. Process according to Claim 1, in which the bearing surface consists of one of the faces of a false tongue embedded approximately in the middle of those joining edges of the sections which are to be welded.

3. Process according to Claim 1, in which the bearing surface consists of the invisible face of a tongue extending the joining edge of one of the sections, on the visible side, and engaging in a corresponding groove made in the other section.

4. Process according to any one of Claims 1 to 3, in which the sections are in mutual contact in that part of their joining edges which is located on the visible side.

5. Process according to any one of Claims 1 to 3, in which the sections are not in mutual contact in that part of their joining edges which is located on the visible side, a separation gap being created therein which, after the welding operation, is filled with a sealing substance.

6. Process according to any one of Claims 1 to 5, in which the sections have an extra thickness in the region of their joining edges to be welded.

7. Process for joining sections by butt welding, substantially as herein described with reference to and shown in Figure 2 or with reference to and as shown in Figure 3 of the accompanying drawings.

8. Panel constructed by welding sections by the process according to any one of the preceding claims.

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